

ABSTRACT OF THE DISCLOSURE

[28] A stator winding is divided into segments enabling the stator current to be controlled to flow within a selected portion of the stator winding. The number of "active" turns of the stator winding, that is, the number of turns in which stator current is flowing, determines the motor performance, and thus the speed range over which the motor will operate efficiently. The overall speed range of the motor can be extended by selectively connecting a power supply across one or more segments to thereby dynamically adjust the number of "active" turns of the stator winding. A permanent magnet brushless DC motor incorporating the stator winding of the present invention can be designed having an overall performance characteristic that is similar to that of a series polar direct current motor. It has a higher torque at low speeds, providing good starting and climbing performance of a vehicle incorporating such a motor. The motor can operate efficiently at moderate and high speeds, and can be controlled using a simple control system, thereby enabling simplified operation of an electric vehicle incorporating the motor.